wiring board (PWB) attached to a display panel (e.g., an IC, a resistor element, a capacitor element, an inductor, or a transistor). Such display devices may also include an optical sheet such as a polarizing plate or a retardation plate. Further, it may include a backlight (which may include a light guide plate, a prism sheet, a diffusion sheet, a reflective sheet, and a light source (e.g., an TED or a cold-cathode tube)).

Note that a display element or a display device may be in various modes and may include various elements. For example, there are display media of which contrast changes by an electromagnetic function, such as EL elements (e.g., organic EL elements, inorganic EL elements, or EL elements containing both organic and inorganic materials), electron-emissive elements, liquid crystal elements, electronic inks, grating light valves (GLV), plasma displays (PDP), digital micromirror devices (DMD), piezoceramic displays, and carbon nanotubes. In addition, display devices using an EL element include EL displays; display devices using an electron-emissive element include field emission displays (FED), surface-conduction electron-emitter displays (SED), and the like; display devices using a liquid crystal element include liquid crystal displays, transmissive liquid crystal displays, semi-transmissive liquid crystal displays, and reflective liquid crystal displays; and display devices using electronic ink include electronic papers.

One feature of the present invention is a method for manufacturing a semiconductor device, comprising the steps of forming an organic compound layer including a photocatalyst substance over a first substrate having a light-transmitting property; forming an element layer over the organic compound layer including a photocatalyst substance; irradiating the organic compound layer including a photocatalyst substance with light which has passed through the first substrate; and separating the element layer from the first substrate.

One feature of the present invention is a method for manufacturing a semiconductor device, comprising the steps of: forming an organic compound layer including a photocatalyst substance over a first substrate having a light-transmitting property; forming an insulating layer over the organic compound layer including a photocatalyst substance; forming an element layer over the insulating layer; irradiating the organic compound layer including a photocatalyst substance with light which has passed through the first substrate; and separating the element layer and the insulating layer from the first substrate.

One feature of the present invention is a method for manufacturing a semiconductor device, comprising the steps of forming an organic compound layer including a photocatalyst substance over a first substrate having a light-transmitting property; forming an element layer over the organic compound layer including a photocatalyst substance; irradiating the organic compound layer including a photocatalyst substance with light which has passed through the first substrate; attaching a second substrate to the element layer; and separating the element layer from the first substrate to the second substrate.

One feature of the present invention is a method for manufacturing a semiconductor device, comprising the steps of forming an organic compound layer including a photocatalyst substance over a first substrate having a light-transmitting property; forming an insulating layer over the organic compound layer including a photocatalyst substance; forming an element layer over the insulating layer; irradiating the organic compound layer including a photocatalyst substance with light which has passed through the first substrate; attaching a second substrate to the element layer; and separating the element layer and the insulating layer from the first substrate to the second substrate.

One feature of the present invention is a method for manufacturing a semiconductor device, comprising the steps of forming an organic compound layer including a photocatalyst substance over a first substrate having a light-transmitting property; forming an element layer over the organic compound layer including a photocatalyst substance; irradiating the organic compound layer including a photocatalyst substance with light which has passed through the first substrate; attaching a second substrate to the element layer; separating the element layer from the first substrate to the second substrate; and attaching the element layer to a third substrate by an adhesive layer.

One feature of the present invention is a method for manufacturing a semiconductor device, comprising the steps of forming an organic compound layer including a photocatalyst substance over a first substrate having a light-transmitting property; forming an insulating layer over the organic compound layer including a photocatalyst substance; forming an element layer over the insulating layer; irradiating the organic compound layer including a photocatalyst substance with light which has passed through the first substrate; attaching a second substrate to the element layer; separating the element layer and the insulating layer from the first substrate to the second substrate; and attaching the element layer to a third substrate by an adhesive layer.

In the above structures, after separating the element layer from the first substrate, a third substrate attached to the element layer side may be formed from a material which does not transmit light in a wavelength which activates the photocatalyst substance left in the element layer. In addition, when the second substrate and the third substrate are flexible substrates, resin films or the like, semiconductor devices or display devices having flexibility can be manufactured.

In the present invention, by dispersing the photocatalyst substance into the organic compound layer, the organic compound is decomposed (broken) by a photocatalyst function of the photocatalyst substance and the organic compound layer is made rough, thereby peeling the element layer from the substrate. Thus, since it is unnecessary to apply a large amount of power to the element layer in order to peel it, the element layer can be easily and freely transferred to various types of substrates in a good shape state, without breaking the element in the peeling process.

According to the present invention, a semiconductor device and a display device can be manufactured using a peeling process, in which a transfer process can be conducted with a good state in which a shape and property of the element before peeling is kept. Therefore, more highly reliable semiconductor devices and display devices can be manufactured with high yield without complicating the apparatus and the process for manufacturing.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIGS. **1**A to **1**D show an aspect of the present invention;

FIGS. **2**A to **2**D show an aspect of the present invention;

FIGS. **3**A to **3**D show an aspect of the present invention;

FIGS. **4**A to **4**D show an aspect of the present invention;

FIGS. **5**A to **5**C show an aspect of the present invention;

FIGS. **6**A to **6**D show a manufacturing method of a display device according to an aspect of the present invention;